

DIAGNOSTIC STRATEGY FOR AN ELECTRIC MOTOR USING SENSORLESS CONTROL AND A POSITION SENSOR

Abstract

A strategy to control and diagnose the operation of an electric motor using a sensorless control system augmented by feedback from a position and speed sensor is disclosed. The strategy can improve the robustness of operation and diagnose potential faults in electric motors. The present invention includes a method for diagnosing operation of an electric motor and a method and system for controlling an electric motor. In the diagnostic method, a sensorless system and a sensor based system are checked against each other to determine if either of the systems is faulted. In the control method, the sensor based control system is used when the motor speed is below a predetermined threshold and the sensorless system is used when the motor speed is above the predetermined threshold. The position sensor can be a low resolution position sensor, an engine crankshaft sensor, an engine camshaft sensor, or a transmission sensor.